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ABSTRACT

The purposes of this investigation were to describe the curricular elements of a museum and to determine if the framework for interpreting a school curriculum found in "A Study of Schooling" (Goodlad & Associates, 1979) is applicable to the informal curriculum of the non-school setting. Eight museums were studied; curators were interviewed, and 442 visitors observed. The nine curriculum variables from "A Study of Schooling" which were used are: goals and objectives, materials, content, learning activities, strategies, evaluation, grouping, time, and space. Each variable's appropriateness for describing a museum curriculum is discussed. Results show that "A Study of Schooling's" model can be restructured and used as a framework to guide a study of a non-school setting. Suggestions for revisions are offered. The study's major implication is that experiential learning needs further investigation to reveal ways of bringing the formal and experiential curriculum into congruence. (RM)

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TESTING THE APPLICABILITY OF A SCHOOL CURRICULUM MODEL IN A NON-SCHOOL ENVIRONMENT

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A paper presented at the Annual Meeting of the American Educational Research Association, New Orleans.

The Problem

Eighty percent of learning throughout one's lifespan occurs outside of formal schooling. (Peterson, 1981; Tough, 1981) Yet, there has been little inquiry into the educational milieu of non-school institutions. Non-school curriculum has not been defined and described as systemmatically as has its formal counterpart, although studies are beginning to address the problem. (Anderson, 1968; Low, 1948; Screven, 1974; Wulf and Tymitz, in Patton, 1980) In light of the evidence for the importance of non-school learning, a redress of this imbalance is in order. "How learning actually takes place in everyday settings is a necessity...that should receive first priority." (Cross, 1981, p. 199)

This call for extensive study of non-school learning suggests three ways in which the curriculum that contributes to that learning needs to be explored:

1. The curriculum of non-school education needs to be described and defined according to its unique elements.

   Although non-school education has been described in general (i.e., by Tough and Peterson), its curricular elements have not been identified. Curricular elements as planned by non-school educators and as experienced by non-school learners have not been compared for discrepancies that may affect learning. Only formal education has been described according to its curricular elements and the perspectives of its participants. An ecological approach to education (Cremin, 1976) suggests that institutions other than schools also have a deliberate curriculum. This curriculum has yet to be described in a manner that will allow it to be defined positively, and not as "non-school" curriculum.

2. Non-school curriculum needs its own heuristic devices for classifying and relating curricular elements and perspectives.

Extant classificatory schemes are based on school curriculum. Their applicability to informal curriculum has not been demonstrated. Although such schemes may suggest starting points for the study of non-school curriculum, they may not indicate elements and relationships relevant to a complete description of such learning environments.

3. Non-school curriculum needs to be linked to formal curriculum for a holistic understanding of the educational ecology.

Conceptual models demonstrating the interrelationships among school and non-school curricular elements and perspectives need to be formulated to connect schools with the plethora of other institutions that educate. This need belongs to the future study of non-school education; descriptions, classifications, and relationsihps first must be delineated for non-school curriculum.

Purpose of the Study

This study addressed these three needs of non-school education by:

1. Describing and defining the curricular elements of non-school education.
2. Suggesting a heuristic conceptual model of non-school education.
3. Relating the non-school curriculum to its formal counterpart in order to ascertain curriculum elements characteristic of education as a whole.

Phase I of the study (February - November 1983) focused on describing ahd defining the curricular elements of non-school education and on modifying a heuristic conceptual

model of formal school curriculum for use in studying non-school curriculum. Phase II (scheduled for completion by October 1984) is focusing on refining the heuristic conceptual model and relating school and non-school curriculum in a holistic consideration of the curricular environment.

This paper will report the findings from Phase I of the study. The curricular elements of a non-school educational setting will be described in light of the conceptual model that guided the study. The paper will also examine the conceptual and methodological issues encountered in using such a framework to "guide" a naturalistic inquiry into experiential education in non-school settings..

Methodology

The study used naturalistic inquiry because the principles of that approach were congruent with the purposes of the investigation in two ways:

1. The study was concerned with providing descriptive data to ground future theories of non-school education. Naturalistic inquiry aids a descriptive study by focusing on the educational environment. Its hypotheses and questions are emergent. They are redefined and refocused continually, unlike the fixed dichotomous hypotheses (accept-reject) of the experimental approach. Thus, naturalistic inquiry was appropriate for this study in which questions were asked to clarify the nature of an informal education environment. It was not the purpose of the study to experiment with the curricular outcomes that such an environment could produce.

2. The study was concerned with categorizing the descriptive data. Naturalistic inquiry aids the categorization process by searching for recurring regularities and for features that belong together. The approach works back and forth between data and categories, modifying the latter until all of the former have been classified. Although this investigation began with previously developed curriculum categorizations, its purpose was to build a new classificatory scheme descriptive of non-school curriculum. Naturalistic inquiry's emphasis on extending existing categories and building new one made it a useful method for this study.

Observation and interview guides (Appendices A and B) have been used to collect the data. The instruments emerged from field experiences during Phase I, and were refined continually in light of data from that phase of the study.

Sample Setting. The study focuses on museums as non-school educative institutions. Cremin has suggested that the non-school environment includes "families, churches, synagogues, libraries, museums, summer camps, benevolent societies, agricultural fairs, settlement houses, factories, radio staions, and television networks." (Cremin, 1976, p. 29) However, for this study, museums were selected because of their vigorous self-identification as educational institutions.

The role of educator, perhaps an obvious one for museums, nevertheless represents a pivotal development in non-school education, for only within the last few decades have museums acknowledged their educational purpose. (Hudson, 1975) Historically, acquistion, preservation, and research were museums' goals. Education was appended reluctantly to the list, and only because the public

insisted upon flocking to exhibit halls. (Screven, 1974) Not until the late 1960s was education acknowledged as the paramount purpose of museums. (Rogers, 1969)

For Phase I of the investigation, eight museums (Appendix C) were studied, eight curators were interviewed, and 442 visitors were observed.

Framework. The study drew upon extant curriculum models that have delineated curriculum elements that are found in schools. While these elements may not have the same nature in non-school settings, it is reasonable to expect that school and non-school learning share common characteristics. It is also reasonable to expect that a school curriculum framework may need to be modified extensively to make it a comprehensive descriptor of non-school curriculum. This investigation considered its framework -- A Study of Schooling (Goodlad & Associates, 1979) -- as a malleable guide, and not as a set of pre-determined pigeonholes.

A Study of Schooling offered an appropriate conceptual base because both it and this study are concerned with description. Other curriculum models focus on many of the same variables, but are prescriptive in their intent. For example, Tanner & Tanner (1975) and Zais (1976) agreed that goals and objectives, content, learning activities and methods, and evaluation were critical curriculum variables. They stipulated, however, that the nature of these variables should be determined by the Tylerian triumvirate (disciplines-society-learner), and be firmly based in a

philosophical premise. Hunkins (1980) further stipulated that a system of continuous feedback should obtain among the curriculum variables.

These models provide conceptual support for A Study of Schooling; however, their prescriptive nature precludes their use in this study. The models assume certain school curriculum variables and stipulate the relationships among them. In as much as non-school curriculum variables have not yet been delineated, it would be premature to prescribe their interrelationships. In its nascent stage, non-school curriculum inquiry needs description of what is, not ungounded prescriptions of what ought to be.

A Study of Schooling described nine curriculum elements, or variables, which were used in this study:

1. Goals and objectives, the intended learning outcomes;
2. Materials, the objects in the learning environment;
3. Content, the subject matter and processes of the materials;
4. Learning Activities, the experiences designed to facilitate learning;
5. Strategies, the methods of instruction;
6. Evaluation, the methods for gathering data to assess learner progress;
7. Grouping, the formation of groups to promote learning;
8. Time, the scheduling and use of time in the learning environment; and
9. Space, the arrangement and use of the space of the learning environment.

A Study of Schooling postualted that the nine variables could be considered from five perspectives:

1. the ideal perspective of educational philosophy;
2. the formal perspective of school districts and boards;
3. the instructional perspective of teacher intentions;
4. the operational perspective of teacher actions; and
5. the experiential perspective of the learner.

Two of the perspectives were used in this study: the formal perspective of museum directors and the experiential perspective of museum visitors. The focus on these two perspectives revealed discrepancies bewteen them in the museum curriculum. The three remaining perpsectives were not used; an ideal perspective has yet to be formulated for museums, and the absence of teachers in museums makes the instructional and operational perspectives problematic.

Findings

The findings reported below are those of Phase I of the study (February - November 1983). This Phase sought to define and describe museum curriculum, and to modify A Study of Schooling's framework in light of non-school curriculum data. The findings are considered according to the curriculum variable and the ways they were perceived by

curators and visitors. The appropriateness of each variable for museum curriculum is discussed.

The curators all expressed broad educational goals for their exhibits. One curator had placed the goal statement on public display in the museum. However, none of the curators had formulated any specific behavioral objectives for the visitors to attain. The formal delineation of measurable learning outcomes is anathema to traditional museum philosophy. (Hudson, 1975) It is not surprising that these curators did not specify the exact nature of the learning to be gained from each exhibit.

There often was a gulf between the curators' goals and the visitors' reasons for coming to the museum. Relief from the weather or from boredom were primary reasons expresssed by individuals or couples. Educational purposes, however, were primary reasons given by visitors with children.

The data indicate that A Study of Schooling's formal and experiential perspectives are useful in illuminating discrepancies between curators' and visitors' goals. The variable itself, however, needs to be modified before it is applicable to the non-school curriculum of museums. First, the variable needs to be renamed with broader terms -- "goals," "purposes," "aims" -- because of the absence of measurable behavioral objectives. Second, the variable needs to be considered after the content of the museum has been ascertained. The behavioristic Study of Schooling framework naturally assumes the primacy of goals and objectives; however, museum goals follow rather than

determine the content with which curators and visitors must work.

The materials at the exhibits were of two types. First were the artifacts, the actual objects with which the exhibit was concerned. These included living and inert realia, manipulables, and models. Second were the explanatory materials that introduced the artifacts and gave directions for their manipulation. These materials included written information and directions, and audio or audio-visual presentations about the artifacts.

This variable from A Study of Schooling's framework is useful for delineating the devices that have been selected to convey the museum's content. As with goals and objectives, the materials variable needs to be considered after the museum's content has been determined. The framework's distinction between the formal and experiential perspectives is not applicable to this variable. Discrepancies between visitors' and curators' use of materials is more properly a consideration of learning activities and teaching strategies.

The broad content of the museums was evident from their titles: "maritime," "science and industry," "health," etc. However, in two instances, the content as interpreted by the curators was not that which the visitors had expected. One museum presented a plethora of uncoordinated scientific topics which was beyond the stamina of visitors to experience. In another case, a museum so restricted its content (local hisory) that visitors requested, but did not

receive, a broader coverage of the topic.

The framework again was useful in illuminating discrepancies between formal and experiential expectations of museum content. The variable itself, however, needs to be considered before all others. The content around which curators build exhibits for visitors to experience usually has been established for some time. Decisions regarding goals, materials, an the other variables depend on the pre-specified content of the museum.

Visitors engaged in six learning activites at the museums. (Table 1) At exhibits with gadgets, manipulation of them was the most popular activity, even when malfunctioning manipulables were clearly labled "Out of Order." Reading of introductory or directive materials accounted for less than ten percent of the activity at the working manipulable displays. Reading general information accounted for more than fifty percent of the learning activity only at exhibits that did not have manipulables.

The learning activites of visitors at manipulable displays contrasted sharply with the teaching strategies of the curators. (Table 2) The curators had provided written introductions and directions to assist the visitors in understanding and manipulating the displays. The curators expected that the visitors would read the general information, read the directions, and then manipulate the gadgets. Two percent of the visitors complied with this sequence of activities. Sixty-four percent learned to operate the manipulables by watching another visitor use

TABLE 1

FREQUENCY OF VISITOR ACTIVITIES

Activity	Exhibits with manipulables		Exhibits without manipulables
	in order	out of order	
	(% of total visitor activity)		
Reads General Information	5%	20%	59%
Reads Directions	9%	1%	(not applicable)
Manipulates	32%	39%	(not applicable)
Touches	6%	8%	21%
Watches Others Manipulate	28%	17%	(not applicable)
Discusses	20%	15%	20%
Total	100%	100%	100%

-104-

TABLE 2

EXPECTED AND ACTUAL ACTIVITY SEQUENCES

	% of visitor activity sequences
Activity Sequence Expected by Curators	
Reads General Information → Reads Directions → Manipulates	2%
Other Visitor Activity Sequences	
Watches Others Manipulate → Manipulates	64%
Reads Directions → Manipulates	15%
Manipulates → Reads Directions → Manipulates	13%
Reads General Information → Manipulates	6%
Total	100%

106-901

them. Reading the directions at any point in an activity sequence accounted for thirty percent of visitor behavior.

Another teaching strategy, however, did have a favorable impact on visitor behavior. The presence of an attention-getter helped to focus the visitors' interest. Curators in two of the museums used visual focusers -- a large picture and a model -- while another curator drew visitors' attention with an unusual, persistant sound. Visitors stayed longer and engaged in less aimless wandering in the museums that had strategies for immediately capturing the visitors' attention.

The data indicate that learning activities and teaching strategies are inextricable in the museum environment. There usually is no "teacher" to mediate between strategy and activity, so visitors interact directly with the strategic materials. A Study of Schooling's distinction between formal and experiential perspectives highlights the potential for a significant discrepancy between curators' strategies and the ways they are interpreted by visitors. The framework needs to be revised to combine these two inseparable variables into one: "teaching strategies and learning activites."

Evaluation was the least applicable variable. None of the curators had expressed measurable learning outcomes for the visitors, and none administered tests to assess such outcomes. The unwillingness of the curators to employ formal testing of their museums' educational impact is consistent with prevailing notions on the subject:

> Is it right for museums to attempt to control people's responses?...What is not immoral, but absurd, is the belief that one can select, arrange, and present objects in such a way that everyone who sees them will and should respond in a prescribed and guaranteed manner. (Hudson, 1975, p. 49)

This variable needs to be studied carefully to determine if it has (or should have) any place in the consideration of museum curriculum.

Visitors grouped themselves in three ways during Phase I: sequential, in which one group followed another group at an exhibit; mixed grouping, in which groups formed and dissolved around exhibits; and loner, in which one individual moved among the exhibits without joining a group. Groups that came to the museum together (e.g., families, classes) usually stayed together; individuals and couples usually did not interact with other groups except in tours or at attention-getters.

The curators had not planned for formal grouping except where tours or introductory audio-visual shows were provided. Informal groups did tend to form around the focusing (attention-getting) exhibits, but it was not apparent that curators had planned for permanent groups to form at these locations.

This variable needs further study. The nature of grouping in museums appears to be more varied than traditional classroom grouping patterns. The fluid grouping patterns characteristic of museums need to be studied to clarify the interaction patterns that may affect learning.

Differences between the formal and experiential perspective also are not clear, although visitors group themselves in ways not planned for by the curators.

Visitors' time at non-manipulable exhibits averaged less than thirty seconds, a finding corroborated by other studies of visitor engagement time. (Hudson, 1975; Screven, 1974) At exhibits that had manipulables, engagement time was as much as twenty minutes, even at displays that were clearly labled "Out of Order." None of the curators expressed an optimal number of minutes (or seconds) that visitors should engage exhibits.

The behaviorist Study of Schooling model naturally is concerned with academic learning time, time on task, and various other time indicators that may have a relationship to the successful completion of behavioral objectives. However, the salutary effects of visitor engagement time at museum exhibits is difficult to determine. Museums lack both behavioral objectives and formal methods for measuring their attainment, and it is not apparent whether twenty seconds or twenty minutes engenders more "learning" (especially when manipulables are out of order). Further study may indicate that the variable of time does not warrant inclusion in a model of museum curriculum.

Space is a superfluous variable that can be discussed within the context of other variables. For example, the arrangement of materials within the museum space is a factor in learning activites and teaching strategies. Too many materials in too large of a hall present a task beyond

the stamina of most visitors. On the other hand, careful placement of an attention-getter can focus the visitors' attention and make for a more thorough museum visit. Space in a museum connotes the strategic arrangement of materials and the activities thus inspired. The variable is more fruitfully considered as it is used by other variables.

Using a Framework to "Guide" a Naturalistic Inquiry

The foregoing discussion of the results of Phase I indicated several areas in which A Study of Schooling's framework was useful for describing the non-school curriculum of museums. The separation of formal and experiential perspectives was illuminating, especially for goals and strategies/activities. Two of the variables -- materials and content -- were useful in their original Study of Schooling definition. The modification of three others increased their applicability to museum curriculum: "objectives" was removed, to be replaced by "goals" or other less behaviorist terms; learning activities and teaching strategies were combined to emphasize that the success of the latter lies with the visitor in the teacher-less museum environment. Two of the variables -- evaluation and grouping -- need further study to ascertain their applicability in museums. Two other variables -- time and space -- did not appear to contribute to a description of the curriculum of museums.

This evidence for the applicability of a modified school curriculum model to a non-school environment notwithstanding, the question remains whether or not a pre-conceived model should be used to guide a naturalistic inquiry. A principle of naturalistic inquiry is that no *a priori* assumptions are made concerning "important" or "trivial" characteristics of the setting. However, the naturalistic inquirer needs some framework with which to make sense of the mass of data that typically results from this approach. "The researcher is making interpretations and must have some conceptual scheme to do this." (Bogdan & Biklen, 1982, p. 32)

This interpretive framework can be devised in two ways. One method is to use interpretations and categories that are indigenous to each setting. This "emic" approach requires the researcher to categorize the data as a "native" would. (Patton, 1980) In the case of this study, data would be categorized according to the schemes used by curators and visitors. Although this approach to framework-building appears to elicit "natural" interpretations, it overlooks the probability that the "natives" may not be aware of common behaviors and may not have bothered to label or categorize them. (Pelto and Pelto, 1970)

The method of using only emic frameworks also hinders future studies of the same phenomenon in different settings. If each setting requires its own emic model, the conceptual wheel suffers from perpetual re-invention. Treating each environment as a unique entity prevents cross-comparisons

and secondary analyses. Frameworks cannot be validated even in the original setting, which has changed over time and so requires a new model. The studies themselves are not replicable because the framework arose from a "unique" situation.

The second approach to frameworks is to use those that the researcher constructs from theories and previous data. These "etic" models give a framework for interpreting new data, but also run the risk of serving as inappropriate pigeonholes if used in a rigid manner. This study alleviated the problem by considering its etic framework as mutable. The suggested restructuring of A Study of Schooling's model exhibits the three characteristics of a heuristic classificatory scheme (Guba, in Patton, 1980): the revisions are consistent with Phase I data, they account for all of the data, and their common terminology can be used to study and compare other educational environments.

The study contributed to the generalizability of A Study of Schooling. Phase I provided a cross-check for the model's categories with the new museum data. The suggested revisions may eventually lead to a model that allows the comparison of school and non-school learning environments. The study also built on and triangulated the theory, data collection, and analysis technques of A Study of Schooling. The lessons of a previous research effort proved useful in guiding, not dictating, the conduct of curriculum inquiry in a non-school setting.

Finally, the study contributed to the investigation of the experiential curriculum, an investigation that Schwab (1969) had called for to prevent the curriculum field from becoming "moribund." Phase I answered the call by empirically studying the experiences of the museum visitors. The purpose was to describe those experiences, and not to generate objective "rules" for the learning behaviors that occur in muesums. Only through description is it possible "to know what we are doing, what we are not doing, and to what effect." (Smith, 1983, p. 74)

Indeed, the investigation of the experiential perspective indicated that visitors are "doing" in ways not anticipated by the curators. Dewey suspected that learning may not involve the written word, and visitors' activities indicated that experiential learning in museums often does not include even the most brief of readings -- "Out of Order." The major implication of the study is that experiential learning, in the museum at least, needs further investigation to reveal ways of bringing the formal and experiential curricula into congruence.

APPENDIX A
OBSERVATION GUIDE

Site _____ Date _____
Observation # 1 2 3 4 Time ___ - ___
Number of Visitors: _____

Goals, Purposes, Aims

knowledge for self
knowledge for children/others
in the area
something to do
escape weather

Materials

written
realia (living)
realia (inert)
realia (non-manipulable machinery)
manipulables
models
audio
audio-visual

Content (list exhibit content)

Strategies

attention-getter
introduction (written)
introduction (audio, audio-visual)
visual aids
audio-visual aids
guided tour
self-guided tour
attendant docent
live demonstration
manipulables

Activities

reads general information
reads directions
manipulates
watches
discusses
touches

Evaluation (list comments)

Grouping

sequential
mixed
loner

Time

(list exhibit)
more than 30 secs.

Space

exhibits
furniture
structural

APPENDIX B
INTERVIEW GUIDE

Site _____ Date _____

1. What criteria are important to you in constructing an educational environmentt?

2. What goals (aims, purposes) do you have for the visitors?

3. What materials have you used to help visitors reach these goals?

4. What is the content of the exhibits?

5. What strategies have you used to catch the visitors' interest and help them toward the goals?

6. What activities do you expect of the visitors?

7. How do you evaluate whether or not visitors have achieved your goals?

8. What methods do you use to group visitors as they proceed through the museum?

9. How much time would you expect a visitor to spend at the displays?

10. How does the arrangement of the space of the museum help visitors achieve your goals?

APPENDIX C
PHASE I MUSEUMS

Exploratorium, San Francisco, California

Kinsey Hall of Health, Los Angeles, California

Maritime Museum, San Pedro, California

Museum of Science and Industry, Los Angeles, California

Mt. St. Helens National Volcanic Site, Washington

Rancho Los Alamitos, Long Beach, California

Sequoia National Park Headquarters, California

Yavapai Museum, Grand Canyon National Park, Arizona

References

Anderson, S. B. Noseprints on the glass, or how do we evaluate museum programs? In E. Larrabee (Ed.) Museums and education. Washington, DC: Smithsonian Institution Press, 1968.

Bogdan, R. C., & Biklen, S. K. Qualitative research for education: An introduction to theory and methods. Boston: Allyn & Bacon, 1982.

Cremin, L. A. Public education. New York: Basic Books, 1976.

Cross, K. P. Adults as learners. San Francisco: Jossey-Bass, 1982.

Goodlad, J. I., Klein, M. F., and Tye, K. A. Curriculum inquiry. New York: McGraw-Hill, 1979.

Hudson, K. A social history of museums. Atlantic Highlands: Humanities Press, 1975.

Hunkins, F. P. Curriculum development: Program improvement. Columbus: Merrill, 1980.

Low, T. L. Educational philosophy and practice of art museums in the United States. New York: Columbia University, 1948.

Patton, M. Q. Qualitative evaluation methods. Beverly Hills, Sage, 1980.

Pelto, P. J. Anthropological research. New York: Harper & Row, 1970.

Peterson, R. E. Opportunities for adult learners. In A. W. Chickering and Associates, The modern american college. San Francisco: Jossey-Bass, 1981.

Rogers, L. E. Museums and related institutions. Washington, DC: HEW, 1969.

Schwab, J. The practical: A language for curriculum. School Review , 77 (November 1969).

Screven, C. G. The measurement and facilitation of learning in the museum environment: an experimental analysis. Washington, DC: Smithsonian Institution Press, 1974.

Smith D. G. Experimental eidetics as a way of entering curriculum language from the ground up. Journal of Curriculum Theorizing , Summer 1983.

Tanner, D., and Tanner, L. N. Curriculum development. New York: Macmillan, 1980.

Tough, A. Interests of adult learners. In A. W. Chickering and Associates, The modern american college. San Francisco: Jossey-Bass, 1981.

Zais, R. S. Curriculum principles and foundations. New York: Crowell, 1976.